

bacteria. Putrefaction also depends upon the action of bacteria. Other bacteria enter into living organisms, grow and multiply in them, and produce poisons which are the causes of those diseases which we know under the name of "infectious diseases."

(To be continued.)

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## HYGIENE OF THE HOUSEHOLD

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ONE important feature in the arrangement for a surgical operation is the sterilizing of water, towels, instruments, and other appliances.

In regard to the water, both hot and cold boiled water will be required, unless Hygeia water is provided to take the place of the latter.

You cannot err in having ready a good supply of sterilized water, as an emergency may arise in which a double quantity would be required. Clean the wash-boiler thoroughly, fill it almost to the top, and boil for half an hour. One boilerful must be prepared in time for the water to grow cold before the operation; it is then poured into pitchers that have been washed in warm soapsuds and rinsed off with the sterilized water. Cover the pitchers with sterilized towels.

The second boilerful is carried direct to the operating-room about twenty minutes before the surgeon arrives.

As to the wet and dry sterilized towels, two dozen are pinned up in an old towel or piece of sheeting and put on a dish into the oven for two or three hours; keep the oven at a moderate heat, and look at the towels occasionally to be sure they are not burning. The remaining two dozen towels are fastened in an outside covering and put in a granite pot or dishpan, with a plate in the bottom; cover completely with water and boil for one hour. When the nurse's hands are sterilized, the towels are removed from their outer covering, and the wet ones are wrung out, opened from the folds, and laid in a sterilized basin to be ready at a moment's notice. As a rule, the surgeon's assistant attends to the instruments, but if the nurse is called upon to sterilize them and has no regular sterilizer at hand, tie them up in a towel or piece of cheese-

cloth, and boil them for about half an hour in a granite or porcelain pan. A handful of washing-soda added to the water will prevent the instruments rusting. As to the fountain syringe, nail-brush, or any other appliance requiring to be sterilized, wrap them separately in cheese-cloth, and boil for fifteen or twenty minutes.

It is of the utmost importance that everything should be in perfect readiness when the surgeon arrives. The nurse will do well to go over the list carefully, so that nothing may be missing. Then take a final survey of the room, see that the basins for the sponges and fountain syringe are filled with solution, the tables covered with sterilized towels, dressings in order, temperature of the room right, safety-pins in a small dish of alcohol, soap, razor, nail-brush and solution ready to prepare the part to be operated on, and the bathroom supplied with hot and cold water, towels, synol or green soap, sterilized nail-brush, bichloride solution and alcohol for the surgeon's hands, so that there may be no hurry at the last moment, and the nurses, in immaculately clean uniforms, aprons, and caps, with sleeves rolled up above their elbows, are ready to assist at the operation.

It is fully as important for the nurses to sterilize their hands carefully as for the surgeon to do so, because they will be called upon to handle instruments, towels, dressings, sponges, and to assist in many ways that will bring them in contact with the wound; and when their hands are sterilized, great care must be taken not to touch anything that is not sterilized. As a general rule, rubber gloves are used in modern surgery by surgeons and nurses, but that does not do away with the necessity for a thorough sterilizing of the hands. The arms and hands are scrubbed first with the sterilized nail-brush, warm water, and synol or green soap (especial attention being given to the nails, which must be cut very short), then the hands are steeped for a few seconds in a solution of 1 to 2000 bichloride and afterwards in equal parts of alcohol and water. When gloves are worn, the hands must be well dried with a sterilized towel before putting them on.

The surgeon will give directions as to what is required in the way of preparing the patient—the care of the bowels, preparation of the part to be operated on, amount of breakfast to be eaten, etc.

The nurse must see that the patient is dressed in undervest, night-gown, dressing-gown, stockings, and shoes; the dressing-gown and shoes are removed just before the anæsthetic is given. No tight bands are allowed around the waist or neck, so that the breathing may be perfectly free. The bladder should be emptied just before the operation. It is wiser not to allow the patient to see or hear the preparations in the operating-room, as it will make her nervous and apprehensive; almost

everyone dreads the thought of undergoing a surgical operation, and should they witness the extensive preparations required for a major operation their courage would surely give out at the crucial moment.

To prepare a suitable bed for a surgical case requires a little management in a private home.

When the operation is a major one (as we are now considering) a single bed is a necessity that cannot well be done without. Anyone who has tried to nurse a patient in a large double bed through a serious illness or after a severe operation, with the daily changing of sheets, morning baths, dressing of wounds, moving and lifting the patient from both sides, and all the hundred and one items included under the head of "nursing," will endorse my statement. Let us therefore provide a single, iron bedstead with firm hair mattress (it may be placed in the bedroom for the first two or three weeks, after which the patient could return to the larger bed if desired). To make the bed, spread the under sheet smoothly and pin it to the four corners of the mattress with safety-pins. Then across the middle of the bed lay a piece of rubber sheeting long enough to tuck in on both sides and about three-quarters of a yard wide; this is covered with the draw-sheet (a single sheet folded lengthwise answers the purpose) put on very tightly and pinned through the rubber sheeting to the under side of the mattress at the four ends. Not a wrinkle should appear in a well-made surgical bed.

An upper sheet and blanket are tucked in at the foot and then folded down in layers to the end of the bed, so that they may be drawn up swiftly over the patient after the operation.

As all the warmth possible will be required to restore the normal temperature of the body, a blanket is spread over the bed for the patient to lie on for the first few hours, also another one to cover her under the top sheet. A towel is laid across the head of the bed in place of a pillow, and some extra ones with a small basin on a little table near at hand in case of vomiting. Hot-water bags are needed to heat the bed *before* the patient is put in it, but accidents from burning occur so often, even when great care is taken, that most surgeons insist on the hot-water bags being taken out of the bed when the patient is put in it and not returned until she is perfectly conscious; even then they ought not to rest against the body unless covered with three or four layers of flannel.

(To be continued.)